IN THE CLAIMS

1. (Currently Amended) A method of manufacturing zirconia-alumina body, comprising:

mixing zirconia, yttria, and alumina with at least one solvent to form a mixture, wherein the zirconia has about 100 ppm silica or less;

drying said mixture to form a dried mixture;

disposing said dried mixture adjacent to an unfired alumina body; and

co-firing said dried mixture and said unfired alumina body to form a zirconia-alumina body, wherein said zirconia-alumina body comprises about 1 weight% to about 45 weight% monoclinic phase zirconia, based upon the total weight of the zirconia.

2. (Previously Amended) The method of manufacturing zirconia-alumina body of Claim 1, further comprising mixing at least one dispersant into the mixture, and wherein the zirconia-alumina body comprises about 15 weight% to about 30 weight% monoclinic phase zirconia with the balance cubic and tetragonal phases, based upon the total weight of the zirconia.

3. (Original) The method of manufacturing zirconia-alumina body of Claim 2, wherein said dispersant is selected from the group consisting of phosphate ester, Menhaden fish oil, sulfosuccinate, castor oil, and mixtures comprising at least one of the foregoing.

4. (Original) The method of manufacturing zirconia-alumina body of Claim 1, further comprising adding at least one binder and at least one plasticizer to said mixture.

5. (Original) The method of manufacturing zirconia-alumina body of Claim 4, further comprises de-airing said mixture.

6. (Previously Amended) The method of manufacturing zirconia-alumina body of Claim 1, wherein the zirconia-alumina body comprises about 18 weight% to about 25 weight% monoclinic phase zirconia with the balance cubic and tetragonal phases, based upon the total weight of the zirconia.

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7. (Original) The method of manufacturing zirconia-alumina body of Claim 4, wherein said at least one binder is selected from the group consisting of polyvinyl butyral, poly methyl methacrylate, poly vinyl formal, and mixtures comprising of at least one of the foregoing.

8. (Original) The method of manufacturing zirconia-alumina body Claim 4, wherein said at least one plasticizer is selected from the group consisting of butyl benzyl phthalate, glycols, phthalates, and mixtures comprising at least one of the foregoing.

9. (Previously Amended) The method of manufacturing zirconia-alumina body of Claim 1, wherein said mixture and said alumina body have a sintering mismatch of less than about 5%.

10. (Original) The method of manufacturing zirconia-alumina body of Claim 1, wherein said co-firing is performed at a temperature about 1,375°C to about 1,550°C.

11. (Original) The method of manufacturing zirconia-alumina body of Claim 10, wherein said co-firing is performed at a temperature of about 1,500°C to about 1,530°C.

12. (Original) The method of manufacturing zirconia-alumina body of Claim 1, wherein said at least one solvent is selected from the group consisting of xylene, ethanol, and mixtures comprising at least one of the foregoing.

13. (Original) The method of manufacturing zirconia-alumina body of Claim 1, wherein the zirconia-alumina body comprises up to about 95 mole% zirconia, up to about 10 mole% yttrium oxide, and up to about 10 mole% alumina, based upon the total weight of the zirconia-alumina body.

14. (Original) The method of manufacturing zirconia-alumina body of Claim 13, wherein the zirconia-alumina body comprises about 85 to about 93 mole% zirconia, about 3 to about 7 mole% yttrium oxide, and about 3 to about 7 mole% alumina, based upon the total weight of the zirconia-alumina body.

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15. (Original) The method of manufacturing zirconia-alumina body of Claim 1, further comprising metallizing the unfired zirconia body to form an electrode on a first side and a second side of said zirconia body.

16. (Currently Amended) A method of manufacturing a sensor, comprising:

mixing zirconia, yttria, and alumina with at least one solvent to form a mixture, wherein said zirconia has about 100 ppm silica or less;

drying said mixture to form an unfired zirconia body;

disposing an electrode on each side of said unfired zirconia body;

connecting each electrode to an electrical lead;

disposing said unfired zirconia body adjacent to an unfired alumina body to form an unfired zirconia-alumina body, wherein one of said electrodes is disposed between said zirconia body and said alumina body; and

co-firing said unfired zirconia-alumina body to form a co-fired zirconia-alumina body comprising about 1 weight% to about 45 weight% monoclinic phase zirconia, based upon the total weight of the zirconia.

17. (Original) A method of manufacturing a sensor as in Claim 16, further comprising disposing a protective layer adjacent to said unfired zirconia body on a side opposite said unfired alumina body.

18. (Original) A method of manufacturing a sensor as in Claim 16, further comprising disposing support layers adjacent to said unfired alumina body, with a heater disposed within said support layers.

19. (Original) A method of manufacturing a sensor as in Claim 18, further comprising disposing a ground plane in said support layers, between said heater and said alumina body.

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20. (Currently Amended) The method of manufacturing ~~zirconia-alumina body~~ a sensor as in ~~of~~ Claim 16, wherein the zirconia-alumina body comprises about 15 weight% to about 30 weight% monoclinic phase zirconia with the balance cubic and tetragonal phases, based upon the total weight of the zirconia.

21. (Currently Amended) The method of manufacturing a sensor as in ~~zirconia-alumina body of~~ Claim 16, wherein the zirconia-alumina body comprises about 18 weight% to about 25 weight% monoclinic phase zirconia with the balance cubic and tetragonal phases, based upon the total weight of the zirconia.

22. (Currently Amended) The method of manufacturing a sensor as in ~~zirconia-alumina body of~~ Claim 16, further comprising adding at least one binder and at least one plasticizer to said mixture.

23. (Currently Amended) The method of manufacturing a sensor as in ~~zirconia-alumina body of~~ Claim 22, further comprises de-airing said mixture.

24. (Currently Amended) The method of manufacturing a sensor as in ~~zirconia-alumina body of~~ Claim 22, further comprising at least one dispersant selected from the group consisting of phosphate ester, Menhaden fish oil, sulfosuccinate, castor oil, and mixtures comprising at least one of the foregoing.

25. (Currently Amended) The method of manufacturing a sensor as in ~~zirconia-alumina body of~~ Claim 22, wherein said at least one binder is selected from the group consisting of polyvinyl butyral, poly methyl methacrylate, poly vinyl formal, and mixtures comprising of at least one of the foregoing.

26. (Currently Amended) The method of manufacturing a sensor as in ~~zirconia-alumina body~~ Claim 22, wherein said at least one plasticizer is selected from the group consisting of butyl benzyl phthalate, glycols, phthalates, and mixtures comprising at least one of the foregoing.

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27. (Currently Amended) The method of manufacturing a sensor as in ~~zirconia-alumina body of~~ Claim 16, wherein said mixture and said alumina body have a sintering mismatch of less than about 5%.

28. (Currently Amended) The method of manufacturing a sensor as in ~~zirconia-alumina body of~~ Claim 16, wherein said co-firing is performed at a temperature about 1,375°C to about 1,550°C.

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29. (Currently Amended) The method of manufacturing a sensor as in ~~zirconia-alumina body of~~ Claim 28, wherein said co-firing is performed at a temperature of about 1,500°C to about 1,530°C.

30. (Currently Amended) The method of manufacturing a sensor as in ~~zirconia-alumina body of~~ Claim 16, wherein said at least one solvent is selected from the group consisting of xylene, ethanol, and mixtures comprising at least one of the foregoing.

31. (Currently Amended) The method of manufacturing a sensor as in ~~zirconia-alumina body of~~ Claim 16, wherein the zirconia-alumina body comprises up to about 95 mole% zirconia, up to about 10 mole% yttrium oxide, and up to about 10 mole% alumina, based upon the total weight of the zirconia-alumina body.

32. (Currently Amended) The method of manufacturing a sensor as in ~~zirconia-alumina body of~~ Claim 31, wherein the zirconia-alumina body comprises about 85 mole% to about 93 mole% zirconia, about 3 mole% to about 7 mole% yttrium oxide, and about 3 mole% to about 7 mole% alumina, based upon the total weight of the zirconia-alumina body.

33 - 35. (Cancelled)

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36. (Currently Amended) The method of manufacturing zirconia-alumina body of Claim 1, wherein said zirconia has a total impurity amount of less than about 1,000 parts per million.

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37. (Currently Amended) The method of manufacturing a sensor as in Claim 16, wherein said zirconia has a total impurity amount of less than about 1,000 parts per million.

38. (New) A method of manufacturing zirconia-alumina body, comprising:

mixing yttria stabilized zirconia, with monoclinic phase zirconia, yttria, and alumina with at least one solvent to form a mixture;

drying said mixture to form a dried mixture;

disposing said dried mixture adjacent to an unfired alumina body; and

co-firing said dried mixture and said unfired alumina body to form a zirconia-alumina body, wherein said zirconia-alumina body comprises about 1 weight% to about 45 weight% monoclinic phase zirconia, based upon the total weight of the zirconia.

39. (New) The method of manufacturing zirconia-alumina body of Claim 38, wherein the zirconia-alumina body comprises about 15 weight% to about 30 weight% monoclinic phase zirconia with the balance cubic and tetragonal phases, based upon the total weight of the zirconia.

40. (New) The method of manufacturing zirconia-alumina body of Claim 39, wherein the zirconia-alumina body comprises about 18 weight% to about 25 weight% monoclinic phase zirconia with the balance cubic and tetragonal phases, based upon the total weight of the zirconia.

41. (New) The method of manufacturing zirconia-alumina body of Claim 38, wherein the zirconia-alumina body comprises about 85 to about 93 mole% zirconia, about 3 to about 7 mole% yttrium oxide, and about 3 to about 7 mole% alumina, based upon the total weight of the zirconia-alumina body.

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42. (New) A method of manufacturing zirconia-alumina body, comprising:

mixing yttria stabilized zirconia, yttria, and alumina with at least one solvent to form a mixture;

drying said mixture to form a dried mixture;

disposing said dried mixture adjacent to an unfired alumina body; and

co-firing said dried mixture and said unfired alumina body to form a zirconia-alumina body.

43. (New) The method of manufacturing zirconia-alumina body of Claim 1, wherein the zirconia has about 1,000 ppm or lower total impurities.

44. (New) The method of manufacturing zirconia-alumina body of Claim 43, wherein the impurities are selected from the group consisting of silica, sodium, calcium, magnesium, iron, titanium, and chlorine.

45. (New) The method of manufacturing zirconia-alumina body of Claim 44, wherein the zirconia has about 100 ppm or less of each of silica, sodium, calcium, magnesium, iron, titanium, and chlorine.

46. (New) The method of manufacturing zirconia-alumina body of Claim 1, wherein the zirconia mixed with the yttria and alumina is monoclinic phase zirconia.

47. (New) The method of manufacturing a zirconia-alumina body of Claim 46, wherein the zirconia has about 1,000 ppm or lower total impurities.

48. (New) The method of manufacturing a sensor as in Claim 16, wherein the zirconia comprises about 1,000 ppm or lower total impurities, and wherein at least one of the electrodes has a resistivity of about 10 ohm-cm or lower at 800°C in air.

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49. (New) The method of manufacturing a sensor as in Claim 48, wherein the impurities are selected from the group consisting of silica, sodium, calcium, magnesium, iron, titanium, and chlorine.

50. (New) The method of manufacturing a sensor as in Claim 49, wherein the zirconia comprises about 100 ppm or less of each of silica, sodium, calcium, magnesium, iron, titanium, and chlorine.

51. (New) A method of manufacturing a sensor, comprising:

mixing yttria stabilized zirconia, monoclinic phase zirconia, and alumina with at least one solvent to form a mixture;

drying said mixture to form an unfired zirconia body;

disposing an electrode on each side of said unfired zirconia body;

connecting each electrode to an electrical lead;

disposing said unfired zirconia body adjacent to an unfired alumina body to form an unfired zirconia-alumina body, wherein one of said electrodes is disposed between said zirconia body and said alumina body; and

co-firing said unfired zirconia-alumina body to form a co-fired zirconia-alumina body comprising about 1 weight% to about 45 weight% monoclinic phase zirconia, based upon the total weight of the zirconia.

52. (New) The method of manufacturing a sensor as in Claim 51, wherein the zirconia comprises about 1,000 ppm or lower total impurities, and wherein at least one of the electrodes has a resistivity of about 10 ohm-cm or lower at 800°C in air.

53. (New) The method of manufacturing a sensor as in Claim 52, wherein the impurities are selected from the group consisting of silica, sodium, calcium, magnesium, iron, titanium, and chlorine.

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54. (New) The method of manufacturing a sensor as in Claim 53, wherein the zirconia comprises about 100 ppm or less of each of silica, sodium, calcium, magnesium, iron, titanium, and chlorine.

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